

0.5 per cent solution of sodium nitrate, they suffer little or no injury. Pea seedlings die in 2 days in a 0.5 per cent of sodium oxalate, but are still uninjured in an equally strong solution of sodium acetate.

In *Spirogyra* the first structure to show the effect is the nucleus, which contracts and becomes lens-shaped. A little later the chloroplasts begin to contract. LOEW finds that the effect is not due to acidity, since 0.005 per cent of oxalic acid is more injurious than 0.01 per cent of citric acid, and 0.0001 per cent more injurious than 0.001 per cent of tartaric acid.

LOEW concludes that the injurious effect of the oxalates is due to the extraction of calcium from the nucleoproteins, chromatin, and plastin, and its replacement by potassium or some other element, and their bringing about a change in the imbibing power of the different parts of the protoplasm. He thinks that calcium is an essential element in the cells of the higher animals and plants.—J. N. MARTIN.

Sutcliffia.—Miss DE FRAINE¹² has made a painstaking investigation, by means of the well known wax plate method of modelling, of the vascular system of *Sutcliffia*, a new genus of the Medulloseae established by SCOTT. Unfortunately the specimen is rather badly dilapidated and for that reason a certain reserve is necessary in interpretation. The vascular system as described by Miss DE FRAINE consists of a large axial "protostele" (sic!) surrounded by three more or less clearly identifiable "meristeles." In addition to these are a number of "extrafascicular" bundles. By a process of reasoning which it is difficult to follow, the author identifies the central "protostele" with the ring of bundles in the Cycadales. It would seem to be in accordance with the general principles of vascular anatomy to regard it as a medullary bundle, and the three surrounding strands as corresponding to the cylinder system of bundles, a conclusion rendered extremely probable by the fact that it is with these that the leaf traces become continuous. *Sutcliffia* is considered to be a primitive type regardless of the fact that it has an extremely multifascicular foliar supply. This would appear to be entirely against all established principles of anatomy. It is gratifying to find that English authors are gradually coming around to the standpoint in regard to the affinities of the Cycadales, namely as rather with the Medulloseae than the Lyginodendreae, which has been held in continental Europe and this country for more than a decade.—E. C. JEFFREY.

Cause of leaf fall.—In a limited series of experiments conducted with detached twigs of various deciduous trees placed in water in a saturated atmosphere, VARGA¹³ has attempted to establish the relationship between this

¹² DE FRAINE, E., On the structure and affinities of *Sutcliffia*, in the light of a newly discovered specimen. *Ann. Botany* 26:1031-1066. *figs. 19. pls. 91, 92.* 1912.

¹³ VARGA, OSKAR, Beiträge zur Kenntnis der Beziehungen des Lichtes und Temperatur zum Laubfall. *Oesterr. Bot. Zeitschr.* 61:74-88. 1911.